Multifunctional RNA Nanoparticles as Therapeutic Agents

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Keywords: Therapeutics, Cancer / Neoplasm: Cancer, Infectious Diseases, Antisense & RNAi, Other Technology, RNAi,nanotechnology,siRNA

Summary:

The National Cancer Institute is seeking statements of capability or interest from parties interested licensing or in collaborative research to co-develop RNAi-based nanoparticle therapeutics for cancer and HIV.

Description of Technology:

The promise of RNA interference based therapeutics is made evident by the recent surge of biotechnological drug companies that pursue such therapies and their progression into human clinical trials. The present invention discloses novel RNA and RNA/DNA nanoparticles including multiple siRNAs, RNA aptamers, fluorescent dyes, and proteins. These RNA nanoparticles are useful for various nanotechnological applications. This technology has a higher detection sensitivity and higher silencing efficiencies of targeted genes than conventional siRNAs. This technology has significant therapeutic potential against multiple disease types, including, cancer and viral infections. A breast cancer xenograft mouse model indicated uptake of the nanoparticles, and six different HIV targets were validated with cell cultures.

Potential Commercial Applications:

-- Treatment for cancer and HIV

Competitive Advantages:

-- More sensitivity
-- Higher efficiency
-- Low cytotoxicity
-- Multiple functionality
-- Multiple targets
--Visualization
-- Controlled activation

Inventor(s):

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Development Stage:

-- Discovery (Lead Identification)

Patent Status:

US (filed): US Provisional Application No. 61/878,758 filed 17 Sep 2013

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Co-Development Opportunities:

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Related Opportunities:

E-039-2012, E-156-2014